UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

SEP 2 0 2019

Mr. Darius Sweet, CEO
Limetree Bay Terminals, LLC and Limetree Bay Refining, LLC
1 Estate Hope
Christiansted, U.S. Virgin Islands 00820-5652

Re: Draft Plantwide Applicability Limit (PAL) Permit for Limetree Bay Terminals, LLC and Limetree Bay Refining, LLC, St. Croix, U.S. Virgin Islands

Dear Mr. Sweet:

On November 26, 2018, Limetree Bay Terminals, LLC and Limetree Bay Refining, LLC (Limetree) submitted to the Region 2 Office of the U.S. Environmental Protection Agency (EPA) an application for a Plantwide Applicability Limit (PAL) permit for its refining operations located in St. Croix, U.S. Virgin Islands, pursuant to regulations codified at 40 CFR 52.21(aa). A PAL is a voluntary pollutant-specific plantwide emission limitation, expressed in tons per year (over a "rolling 12-month period"), that provides the source the flexibility to make changes to its operation within the facility while limiting emissions increases to levels that do not trigger the Prevention of Significant Deterioration of Air Quality (PSD) permit requirements. Limetree seeks a PAL permit for its St. Croix, U.S. Virgin Islands facility and has proposed PALs for Sulfur Dioxide, Nitrogen Oxides, Volatile Organic Compounds, Carbon Monoxide, Particulate Matter (PM), PM10, and PM2.5, respectively, in accordance with 40 CFR 52.21(aa), the procedures for setting the 10-year actual PALs.

The EPA determined Limetree's PAL application to be complete as of December 27, 2018. Based on our review of the PAL application and the Environmental Justice Analysis conducted pursuant to Executive Order 12898, EPA has made a preliminary determination to issue a Draft Plantwide Applicability Limit permit to Limetree, subject to public review and comments. This permit sets a PAL for each of the seven pollutants proposed by Limetree with conditions that ensure robust monitoring, recordkeeping and reporting at the facility. Based on the environmental justice analysis, the permit also requires ambient air monitoring for SO2, NO2 and PM2.5 to protect the community by detecting violations of the health-based National Ambient Air Quality Standards, if any.

EPA will publish a notice in the Virgin Islands Daily News and on EPA's website at https://www.epa.gov/caa-permitting/caa-permits-issued-epa-region-2 within two weeks to announce the beginning of a forty-five (45) day public comment period. During the public comment period provided under 40 CFR §124.10, any interested person may submit written comments on the draft permit. The public notice will also announce a public hearing that will take place 30 days after the start of the public comment period and a public availability session that will take place a day before the scheduled public hearing. The public comment period shall end 15 days after the close of the public hearing. Any persons, including the applicant(s), who believe any condition of the draft permit is inappropriate, must raise all reasonably ascertainable issues and submit all reasonably available arguments supporting their position by the close of the public comment period under 40 CFR §124.10. All comments will be considered in making the final decision and will be addressed in the response to comments document, as required by 40 CFR §124.17.

Enclosed with this letter are the Draft PAL Permit, Fact Sheet, and the Public Notice. If you have any questions regarding this letter or the enclosures, please call Ms. Suilin W. Chan, Chief, Permitting Section, Air Programs Branch, at (212) 637-4019.

Sincerely,

John Filippelli

John Filippelli, Director
Air and Radiation Division

Enclosures

e-cc: Catherine Elizee, Limetree
Philip May, RTP Environmental
Kathlyn Worrell-George, VIDPNR
Verline Marcellin, VIDPNR
Angela Arnold, VIDPNR

LIMETREE BAY TERMINALS AND LIMETREE BAY REFINING

St. CROIX, U.S. VIRGIN ISLANDS

DRAFT PLANTWIDE APPLICABILITY LIMIT PERMIT

EPA – PALs -VI-001/2019

The U. S. Environmental Protection Agency (Region 2) is issuing this draft Plantwide Applicability Limit permit for seven air pollutants (PALs) to Limetree Bay Terminals, LLC and Limetree Bay Refining, LLC (together constituting "The Permittee") pursuant to 40 CFR 52.21(aa) for the major stationary source comprising a refinery and related terminal operations. Pursuant to 40 CFR 124.15(b), this permit, if issued in final, becomes effective 30 days after the date of signature unless review is requested on the permit under 40 CFR 124.19. The PALs effective period is 10 years from the effective date of final permit issuance. The final permit, if issued, shall remain in effect until it is surrendered to EPA or it expires. The permittee shall submit an application to the U.S. Virgin Islands Department of Planning & Natural Resources within 90 days of the effective date of the final PALs permit, if issued, to incorporate the terms and conditions of the final PALs permit into the Clean Air Act title V permit issued by the U.S. Virgin islands. This draft PALs permit establishes plantwide emissions limits for Volatile Organic Compounds (VOC), Nitrogen Oxides (NOx), Carbon Monoxide (CO), Particulate Matter less than or equal to 2.5 micron (PM2.5), Particulate Matter less than or equal to 10 micron (PM10), Particulate Matter (PM), and Sulfur Dioxide (SO2) at this source. During the PALs effective period, physical changes or changes in the method of operation at the source will not be considered a major modification or require approval through the Prevention of Significant Deterioration (PSD) program codified at 40 CFR 52.21, provided the source complies with all conditions in the PALs permit and maintains total source-wide emissions below the limits established thereunder.

I. PLANTWIDE APPLICABILITY LIMITS

Total plantwide emissions, based on a 12-month rolling total, shall not exceed the emission limits in Table A. The Permittee, starting from the effective date of this permit, shall sum the actual emissions of each emission unit across the entire plant by PAL pollutant every month, including the emissions units in the Appendix to this permit and any newly added or modified unit(s), to demonstrate compliance with the Table A limits. For each month during the first eleven (11) months from the PALs effective date, the Permittee shall add the emissions from each emission unit for the current month to the sum of the preceding monthly emissions since the PALs effective date to demonstrate compliance with the PALs listed in Table A (40 CFR 52.21(aa)(4)(i)(a)). This condition does not supersede any applicable emission limits contained in any other federal or state permit or applicable regulation.

Table A. PALs Limits

Pollutant	**Plantwide Applicability Limit tons/year; 12-month rolling total basis**
VOC	6,094
NOx	5,231
CO	3,248
PM2.5	399
PM10	412
PM	466
SO2	1,482

II. GENERAL PERMIT CONDITIONS

A. Any physical change or change in the method of operation of existing emissions sources and/or construction of new emissions sources at this plant which occur(s) during the effective period of this PALs permit shall not be subject to the PSD requirements at 40 CFR 52.21(a) for a particular pollutant provided that the source continues to comply with the PAL for that particular pollutant through the terms delineated in this permit and the permittee maintains total source-wide emissions below the applicable PAL limit established in Table A (40 CFR 52.21(aa)(1)(ii)).

B. If the Permittee applies to renew this PALs permit in accordance with 40 CFR §52.21(aa)(10), the PALs shall not expire at the end of the PALs effective period. It shall remain in effect until a revised PALs permit is issued by the EPA. If the Permittee does not renew the PALs in accordance with the procedures of 40 CFR 52.21(aa)(10), the PALs permit shall expire and the permittee shall be subject to the requirements of 40 CFR 52.21(aa)(9).

C. Emissions from startups, shutdowns, malfunctions, and fugitive emissions, to the extent quantifiable, shall be included in the emission calculations to determine PALs compliance. (40 CFR 52.21(aa)(4)(i)(d)). The Permittee shall make a demonstration to EPA, subject to EPA approval, for any emissions from startups, shutdowns, malfunctions and fugitive emissions that it seeks to exclude from the calculations as not quantifiable.

D. The Permittee shall monitor all emissions units in accordance with the monitoring requirements in this permit and 40 CFR §52.21(aa)(12) and shall use the calculations procedures in Section IV of this permit to convert monitoring system data to monthly emissions and annual emissions based on a 12-month rolling total.

E. Failure to implement and use a monitoring system or method that meets the requirements of this permit and 40 CFR 52.21(aa)(12) shall render the PALs permit invalid (40 CFR 52.21(aa)(12)(i)(d)).

F. The Permittee shall retain the records as required by this permit and in accordance with 40 CFR 52.21(aa)(13) for a period of at least 5 years from the date of record. The records may be retained in an electronic format.

G. The Permittee shall submit the reports pursuant to this permit to the permitting authority (EPA Region 2) in accordance with 40 CFR 52.21(aa)(14) and at the address in Section VII of this PALs permit. The reports may be submitted in an electronic format.

H. Any reopening of this PALs permit shall be governed by the requirements of 40 CFR 52.21(aa)(8)(ii).

I. The EPA may impose any other conditions necessary to implement and enforce the PALs (40 CFR 52.21(aa)(7)(x)).

J. Any request by the Permittee to increase the PALs during the PALs effective period shall be governed by the requirements in 40 CFR §52.21(aa)(11).

K. Limetree Bay Terminals, LLC and Limetree Bay Refining, LLC shall be jointly and severally liable for non-compliance with any condition of this permit.

L. For PALs compliance purposes, the Permittee shall record and report the maximum potential emissions without considering enforceable emission limitations or operational restrictions or use of a control device for an emissions unit during any period of time when there are no monitoring data. (40 CFR 52.1(aa)(12)(vii))

M. All site-specific emission factors that were used to establish the PALs pollutant must be re-validated through performance testing or other scientifically valid means approved by the EPA. Such testing must occur at least once every 5 years after

issuance of the PALs permit. The units where such testings have occurred must be operated within the range of the operational parameters established during the performance tests. (40 CFR 52.21(aa)(12)(ix))

III. MONITORING METHODS – GENERAL REQUIREMENTS

A. Specific monitoring methods for each unit included in the PALs application are addressed in Section IV and the units are listed in the Appendix to this permit. The Permittee shall use one of the following four general monitoring approaches, in order of most preferred to least preferred approaches, for: (1) any new unit that is not included in the Appendix to this permit; (2) any modification to a unit listed in the Appendix to this permit that requires a change in monitoring; and (3) any future monitoring changes to units listed in the Appendix to this permit:

1. Continuous Emissions Monitoring System (CEMS) (40 CFR 52.21(aa)(12)(iv))
   If the Permittee uses CEMS to monitor PALs pollutant emissions, it shall meet the following requirements:

   a. The CEMS must comply with applicable Performance Specifications found in 40 CFR Part 60, Appendix B; and

   b. The CEMS must sample, analyze, and record data at least every 15 minutes while the emissions unit is operating.

2. Continuous Parameter Monitoring Systems (CPMS) or Parametric Emissions Monitoring Systems (PEMS) (40 CFR 52.21(aa)(12)(v))
   If the Permittee uses CPMS or PEMS to monitor PALs pollutant emissions, it shall meet the following requirements:

   a. The CPMS or the PEMS must be based on current site-specific data demonstrating a correlation between the monitored parameter(s) and the PALs pollutant emissions across the range of operation of the emissions unit; and

   b. Each CPMS or PEMS must sample, analyze, and record data at least every 15 minutes, or at another less frequent interval approved by the EPA, while the emissions unit is operating.

3. Emission Factors (40 CFR 52.21(aa)(12)(vi))
   If the Permittee uses emission factors to monitor PALs pollutant emissions, it shall meet the following requirements to establish the unit specific monitoring method:

   a. All emission factors shall be adjusted, if appropriate, to account for the degree of uncertainty or limitations in the factors' development;

b. The emissions unit shall operate within the designated range of use for the emission factor, if applicable; and

c. For major or significant emissions units that rely on an emission factor to calculate PALs pollutant emissions, the Permittee shall conduct validation testing to determine a site-specific emission factor within 6 months of PALs permit issuance, in accordance with Section V of this PALs permit.

4. Mass Balance (40 CFR 52.21(aa)(12)(iii))
If the Permittee uses mass balance calculations to monitor PALs pollutant emissions from activities that use coating or solvents, it shall meet the following requirements to establish a unit specific monitoring method:

a. Provide a demonstrated means of validating the published VOC content of the PALs pollutant that is contained in or created by all materials used in or at the emissions unit;

b. Assume that the emissions unit emits all of the PAL pollutant that is contained in or created by any raw material or fuel used in or at the emissions unit, if it cannot otherwise be accounted for in the process; and

c. Where the vendor of a material or fuel used in or at the emissions unit publishes a range of pollutant content from such material, the Permittee must use the highest value of the range to calculate the PALs pollutant emissions unless the EPA determines there is site-specific data or a site-specific monitoring program to support another pollutant content within the range.

B. For each new and modified unit and other monitoring changes at the units already listed in the Appendix, the Permittee shall, in accordance with the semi-annual report requirements of Section VII of this Permit, submit to EPA the specific monitoring method for that unit, including formulas and calculation methods, along with a proposed amendment to the Appendix to this permit.

C. GENERAL REQUIREMENTS FOR CEMS-MONITORED UNITS

The following general CEMS monitoring requirements shall be incorporated into the calculations procedures in Section IV to determine actual emissions from the emissions units:

1. Pursuant to 40 CFR §52.21(aa)(12)(iv), each CEMS used to monitor PALs pollutant emissions at the source shall comply with the performance specifications in 40 CFR Part 60, Appendix B and sample, analyze, and record data at least every 15 minutes while the unit is in operation. The Permittee shall monitor operating data required to determine compliance with the limit for each PAL

pollutant. Operating data necessary to determine emissions of the PALs pollutant based on the CEMs results shall be monitored and recorded.

2. Calculation Procedures
For CEMS-monitored PALs pollutants, the Permittee shall calculate the pounds-per-hour ("lbs/hr") emission rates from the 15-minute measurements made by the CEMS. The Permittee shall sum the hourly emissions data to determine monthly totals, from which the 12-month rolling total emissions in tons/year shall be calculated. For each month during the first 11 months from the PALs effective date, the Permittee shall add the emissions for the current month to the sum of the preceding monthly emissions since the PALs effective date for each emission unit under the PALs.

D. GENERAL CONDITIONS FOR CONTINUOUS PARAMETER AND PARAMETRIC EMISSIONS MONITORING SYSTEM UNITS/POLLUTANTS

Emissions units that combust refinery fuel gas and/or combust other fuels for which the sulfur content is monitored shall use the general CPMS or PEMS monitoring and calculations procedures in Section III D(1) and (2) below. The heaters, boilers, sulfur recovery plant incinerators, gas turbines, and compressors that do not use CEMs or Emission Factors shall also use the following general methods to determine the actual emissions:

1. Pursuant to 40 CFR 52.21(aa)(12)(v), a CPMS or PEMS used to monitor PALs pollutant emissions at the source shall be based on the current site-specific monitoring that demonstrates a correlation between the monitored parameter(s) and the PALs pollutant emissions across the range of operation of the emissions unit and must sample, analyze, and record at least every 15 minutes. A less frequent interval shall require EPA approval. The corresponding operating data shall be monitored to determine compliance with the limit for each PALs pollutant. The Permittee shall monitor and record the corresponding operating data.

2. Calculation Procedures
For CPMS/PEMS-monitored PALs pollutants, the lbs/hr emission rates shall be calculated from the measurements made by the CPMS or PEMS in conjunction with the corresponding operating data. The hourly emissions data shall be summed to determine monthly totals, from which the 12-month rolling total emissions in tons/year shall be calculated. For each month during the first 11 months from the PALs effective date, the Permittee shall add the emissions for the current month to the sum of the preceding monthly emissions since the PALs effective date for each emission unit under the PALs.

E. GENERAL REQUIREMENTS FOR EMISSION FACTOR-MONITORED EMISSIONS UNITS/POLLUTANTS

The emission units that do not use CEMs or CPMS/PEMS to monitor emissions shall use emission factors to calculate the actual emissions on a monthly basis according to the requirements in E (1), (2) and (3) below.

1. The Permittee shall perform the calculations using the best available emission factor based on stack test data, vendor information, design/engineering calculations, or literature. The Permittee shall monitor and record the operational data necessary to calculate emissions of the PALs pollutants, at a minimum, on a weekly basis.

2. For each PALs emissions unit, the emissions determined from III(E)(1) above shall be summed to monthly totals (tons/month). The 12-month rolling total emissions in tons per year shall be calculated monthly by adding the emissions for the current month to the sum of the monthly emissions for the previous 11 consecutive months. For each month during the first 11 months from the PALs effective date, the Permittee shall add the emissions for the current month to the sum of the preceding monthly emissions since the PALs effective date for each emission unit under the PALs.

3. In accordance with 40 CFR §52.21(aa)(12)(vi), the Permittee using emission factors to calculate PALs pollutant emissions shall meet the following requirements:

   a. All emission factors shall be adjusted, if appropriate, to account for the degree of uncertainty or limitations in the factors' development;

   b. The emissions unit shall operate within the designated range of use for the emission factor, if applicable; and

   c. If technically practicable, the owner or operator of a significant emissions unit that relies on an emission factor to calculate PALs pollutant emissions, shall conduct validation testing to determine a site-specific emission factor within 6 months of the PALs permit issuance, unless the EPA determines that such testing is not required.

IV. SPECIFIC MONITORING REQUIREMENTS

A. FLARES

The Permittee shall monitor with a CEMS the SO2 emissions of the gases being flared from the units listed in Table B-1. The LPG flare shall be monitored for the H2S contents to determine the sulfur content and SO2 emissions. The Permittee shall

also record the flare gas flowrate, heat content, and speciation of the gases flared, at a minimum, on a weekly basis.

Table B-1. Flares SO2

Flare	**Pollutant**	**Monitored By**
East Side, West Side, FCCU and Coker Flares	SO2	CEMS
LPG Flare	H2S	CPMS

1. The SO_2 emissions from the flares shall be calculated using the sulfur content of the gases and the flare gas flow rate with the assumption that all sulfur will be converted to sulfur dioxide.

2. The NOx, CO, PM/PM10/PM2.5, and VOC emissions shall be calculated on a monthly basis using the emission factors described in AP-42, Volume I, Chapter 13.5 except where there is a site-specific emission factor in Table B-2, below. In the event that the methodology in AP-42 is superseded by a more recent edition or editions of AP-42, the permittee shall use the most recent edition to calculate the NOx, CO, PM, PM10, PM2.5, and VOC emissions.

Table B-2. Flare Gas Monitoring

Pollutant	**Emission Factor Lbs/MMBtu – Lower Heating Value (LHV)**	**Emission Factor Lbs/MMBtu – Higher Heating Value (HHV)**	**Monitoring Parameters**
SO2	n/a	0.236	a) Monitor flare gas, at a minimum, weekly to record: flowrate and heat content and speciate gas components b) Monitor flare gas H_2S content
NOx	n/a	0.068	Monitor heat input to flare and other parameters necessary to calculate

			emissions, at a minimum, on a weekly basis
CO	0.31	n/a	Monitor heat input to flare and other parameters necessary to calculate emissions, at a minimum, on a weekly basis
PM	n/a	0.0019	Monitor heat input to flare and other parameters necessary to calculate emissions, at a minimum, on a weekly basis
PM10	n/a	0.0075	Monitor heat input to flare and other parameters necessary to calculate emissions, at a minimum, on a weekly basis
PM2.5	n/a	0.0075	Monitor heat input to flare and other parameters necessary to calculate emissions, at a minimum, on a weekly basis
VOC	0.66	n/a	Monitor heat input to flare and other parameters necessary to calculate emissions, at a minimum, on a weekly basis

n/a = not applicable

B. TANKS

For each tank at the facility, the Permittee shall record the following:

- tank size/volume;
- type of tank (e.g., fixed roof);
- liquid transferred/stored;
- throughput rates;
- tank turnovers;
- roof landings; and

- any other variable parameters necessary to calculate emissions in accordance with the procedures described below, at a minimum, on a weekly basis.

1. The VOC emissions from each tank's working and standing losses as well as roof landing and filling losses shall be calculated, at a minimum, on a weekly basis using the methodology in the most recent edition of AP-42, Chapter 7.

2. The CO and PM emissions from each tank shall be calculated monthly using the procedures in the most recent edition of AP-42, Chapter 11.

3. The 12-month total VOC, CO, and PM emissions in tons/year shall be calculated monthly by adding the emissions for the current month to the sum of the monthly emissions for the previous 11 consecutive months.

4. When using the VOC emission factors, all floating roof tanks' emission calculation parameters shall not exceed a true vapor pressure of 11.1 psia.

C. FCCU

1. The Permittee shall monitor and record the NOx, CO and SO2 emissions using the CEMS and calculate the monthly emissions by using the procedure specified in Table C and Section III.

2. The Permittee shall conduct stack tests within 6 months of the effective date of this permit to develop the correlation of FCCU feed rate to exhaust gas volume and to determine the concentration of PM, PM10, PM2.5 and VOC emissions from the FCCU. Any subsequent stack tests (See Table C) shall be conducted at least once every five years but on a shorter period if required by any other permit or regulation. The FCCU feed rate shall be monitored and recorded, at a minimum, on a weekly basis.

3. The PM, PM10, PM2.5 and VOC emissions from the FCCU shall be calculated on a monthly basis based on the most recent stack-test-based correlation of FCCU feed rate to exhaust gas volume and the most recent stack-test based concentration for the PM, PM10, PM2.5 and VOC emissions from the FCCU. The 12-month rolling total PM, PM10, PM2.5 and VOC emissions in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

Table C. FCCU Monitoring

Pollutant	**Monitored by**	**Operating Data Required**
NO_x	CEMS	Correlation - FCCU feed rate to exhaust volume

SO2	CEMS	Correlation - FCCU feed rate to exhaust volume
CO	CEMS	Correlation - FCCU feed rate to exhaust volume
PM, PM10 and PM2.5	Stack Testing	Correlation - FCCU feed rate to exhaust volume
VOC	Stack Testing	Correlation - FCCU feed rate to exhaust volume

D. HEATERS

1. The Permittee shall record the NOx emissions for the unit H-4901 (Table D-1) using the CEMS and calculate the emissions by the procedure specified in D(2) and (3), below, and in Section III.

Table D-1 (Heater H-4901)

Heater	**Pollutant**	**Monitored by**
H-4901	NO_x	CEMS

2. For heater units with unit-specific emissions factors identified in Table D-2, emissions shall be determined using the unit-specific factors unless more representative emissions factors become available. For units without unit-specific factors for a particular pollutant, emissions shall be determined using the Default Emission factors in Table E or based on the best, most current data available (i.e., stack test data, vendor supplied data, or the literature) and be the most representative of a given unit's operation.

3. The Permittee shall record the fuel flow rate and fuel heat content to determine the heat input rate to each heater. Emission calculations shall be performed and recorded on a unit-by-unit basis using the heat input rate and the listed emission factors in accordance with the procedures described here, at a minimum, on a weekly basis. The 12-month rolling total in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

Table D-2. Heaters – Unit Specific Emission Factors based on Stack Tests/AP-42

Heater – Unit	**NOx [lb/MMBtu]**	**CO [lb/MMBtu]**	**PM [lb/MMBtu]**	**PM10 and PM2.5 [lb/MMBTU]**
H-200	0.191	See Table E	See Table E	See Table E
H-201	0.150	See Table E	See Table E	See Table E
H-801	0.094	See Table E	See Table E	See Table E
H-2202	0.132	See Table E	See Table E	See Table E
H-2501	0.085	See Table E	See Table E	See Table E
H-4302	0.102	See Table E	See Table E	See Table E
H- 4401	0.130	See Table E	See Table E	See Table E
H-4451/4452/4453/4454	0.152	See Table E	See Table E	See Table E
H-4455	0.0.090	See Table E	See Table E	See Table E
H-4602	0.107	See Table E	See Table E	See Table E
H-5302	0.118	See Table E	See Table E	See Table E
H-5401	0.123	See Table E	See Table E	See Table E
H-5451/5452/5453/5454	0.142	See Table E	See Table E	See Table E
H-5455	0.119	See Table E	See Table E	See Table E
Coker Heater H-8501A	0.0258	0.003	0.00075	0.0047

Coker Heater H-8501B	0.0288	0.003	0.00083	0.00225

Table E- Heaters - Default Emission Factors – lb/MMBtu

Fuel	**Size MMBtu/hr**	**NOx**	**CO**	**VOC**	**PM**	**PM10**	**PM2.5**	**SO2**
No. 6	>100 low S	0.48	0.03	0.002	0.04	0.03	0.02	0.3
No. 6	>100 high S	0.48	0.03	0.002	0.05	0.04	0.03	0.5
Fuel Gas	> 100	0.27	0.08	0.01	0.002	0.01	0.01	n/a
Fuel Gas	<100	0.1	0.08	0.01	0.002	0.01	0.01	n/a
Fuel Gas	NSPS J	n/a	n/a	n/a	n/a	n/a	n/a	0.02
Fuel Gas	NSPS Ja	n/a	n/a	n/a	n/a	n/a	n/a	0.01

n/a = not applicable

E. COMPRESSORS

For compressor units with unit-specific emissions factors identified in Table F, emissions shall be determined using the unit-specific factors unless more representative emissions factors become available. For units without unit-specific factors for a particular pollutant, emissions shall be determined using the Default Emission factors in Table G or based on the best, most current data available (*i.e.,* stack test data, vendor supplied data, or the literature) and be the most representative of a given unit's operation. The Permittee shall record the fuel flow rate and fuel heat content to determine the heat input rate to each compressor. Emission calculations shall be performed and recorded on a unit-by-unit basis using the heat input rate and the listed emission factors in Tables F and G, at a minimum, on a weekly basis. The 12-month rolling total in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

Table F -Compressors – Unit Specific Emission Factors based on Stack Tests

Compressor Unit	**NOx – lbs/MMBtu**	**CO - lbs/MMBtu**
C-200A	0.310	1.940
C-200B	0.160	1.740

C-200C	0.130	1.448
C-2400A	0.487	1.580
C-2400B	0.090	1.210
C-4601A	3.589	n/a
C-4601B	3.462	n/a
C-4601C	3.235	n/a

n/a = not applicable

Table G -Compressors – Default Emission Factors in lb/MMBtu

Fuel	**lb/ MMBtu→**	**NOx**	**CO**	**VOC**	**PM**	**PM10**	**PM2.5**	**SO2**
LPG	4SRB*>90%	2.21	3.72	0.03	0.0095	0.0194	0.0194	0.0006
LPG	4SRB<90%	2.27	3.51	0.03	0.0095	0.0194	0.0194	0.0006
LPG	4SLB**>90%	4.08	0.32	0,118	0.00008	0.01	0.01	0.0006
LPG	4SLB<90%	0.85	0.56	0.118	0.00008	0.01	0.01	0.0006

*SRB – Spark Ignition Rich Burn ** SLB- Spark Ignition Lean Burn

F. BOILERS

For boiler units with unit-specific emissions factors identified in Table H, emissions shall be determined using the unit-specific factors unless more representative emissions factors become available. For units without unit-specific factors for a particular pollutant, emissions shall be determined using the Default Emission factors in Table I or based on the best, most current data available (*i.e.,* stack test data, vendor supplied data, or the literature) and be the most representative of a given unit's operation. The Permittee shall record the fuel flow rate and fuel heat content to determine the heat input rate to each boiler. Emission calculations shall be performed and recorded on a unit-by-unit basis using the heat input rate and the listed emission factors in Tables H and I, at a minimum, on a weekly basis. The 12-month rolling total in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

Table H - Boilers-Unit Specific Emission factors based on Stack Tests

Boiler	**NOx – lb/MMBtu**
#8 Boiler (B-3303)	0.227
#9 Boiler (B-3304)	0.257

Table I - Boilers – Default Emission Factors in Lb/MMBtu

Boiler Fuel	**lb/MMBtu→**	**NOx**	**CO**	**VOC**	**PM**	**PM10**	**PM2.5**	**SO2**
#6 Oil	Low Sulfur	0.48	0.03	0.00	0.04	0.03	0.04	0.3
#6 Oil	High Sulfur	0.48	0.03	0.00	0.05	0.04	0.03	0.5
Fuel Gas	>100MMBtu	0.27	0.08	0.01	0.002	0.01	0.01	n/a
Fuel Gas	NSPS J	0.27	0.08	0.01	0.002	0.01	0.01	0.02
Fuel Gas	NSPS Ja	0.27	0.08	0.01	0.002	0.01	0.01	0.01
Gaseous Fue	NSPS D	0.2	0.08	0.01	0.01	0.01	0.01	0.01
Liquid Fuel	NSPS D	0.30	0.03	0.00	0.04	0.03	0.02	0.80

n/a = not applicable

G. GAS TURBINES

The Permittee shall record the NOx and CO emissions for the Gas Turbines 9, 10 and 13 referenced in Table J-1 using a CEMS and calculate the emissions by the procedure specified below and in Section III.

Table J-1

Emission Unit	Pollutant	Monitored By
Gas Turbines 9, 10 and 13	NOx and CO	CEMS

For gas turbine units with unit-specific emissions factors identified in Tables J-2, emissions shall be determined using the unit-specific factors unless more representative emissions factors become available. For units without unit-specific factors for a particular pollutant, emissions shall be determined using the Default Emission factors in Table J-3 or based on the best, most current data available (*i.e.,* stack test data, vendor supplied data, or AP-42) and be the most representative of a given unit's operation. The Permittee shall record the fuel flow rate and fuel heat content to determine the heat input rate to each gas turbine. Emission calculations shall be performed and recorded on a unit-by-unit basis using the heat input rate and the listed emission factors in Tables J-2 and J-3, at a minimum, on a weekly basis. The 12-month rolling total in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

Table J-2 - Gas Turbines – Unit Specific Emission Factors based on Stack tests

Gas Turbine	NOx – lb/MMBtu
GT – 4 (G-3404)	0.518
GT – 5 (G-3405)	0.522
GT- 7 (G – 3407)	0.666
GT – 8 (G- 3408)	0.625

Table J-3 Gas Turbines – Default Emission Factors

Gas Turbine Fuel →	lbs/MMBtu→	CO	VOC	PM	PM10	PM2.5	SO2
Fuel Gas/ LPG	Uncontrolled- >80% load	0.08	0.0021	0.002	0.007	0.007	0.02

Fuel Gas/ LPG	Steam Injection ≥ 80%	0.03	0.0021	0.002	0.007	0.007	0.02
Fuel Gas/ LPG	NSPS J	0.03	0.0021	0.002	0.007	0.007	0.02
Distillate Oil	Uncontrolled – >80% load	0.003	0.0004	0.004	0.012	0.012	0.2
Distillate Oil	Stem Injection ≥ 80%	0.1	0.0004	0.004	0.012	0.012	0.2
Distillate Oil	Sulfur – 0.2%	0.1	0.0004	0.004	0.012	0.012	0.2
Distillate Oil	Sulfur – 0.1%	0.1	0.0004	0.004	0.012	0.012	0.1

H. SULFUR RECOVERY UNITS (SRU), BEAVON UNITS, INCINERATORS, SULFUR PITS

1. The process related SO2 emission units referenced in Table L-1 are comprised of the East and West Sulfur Recovery Units and Beavon Units (Tail Gas Units). The Permittee shall monitor the following operating parameters at each of the process units:
   - fuel flow rate;
   - fuel heat content;
   - sulfur content; and
   - other variable parameters

2. The Permittee shall monitor the SO2 emissions for the sulfur recovery units and Beavon units using the CEMS and calculate the emissions by the procedure specified for CEMS monitored emission units in Section III.

Table L-1. Process SO_2 Emissions

Emission Unit	**Pollutant**	**Monitored By**
West Sulfur Recovery, East Sulfur Recovery Units and Beavon Units	SO2	CEMS

3. SRU Incinerators

Emissions of NOx, CO, PM, PM10, PM2.5, SO2 and VOC from the SRU incinerators shall be calculated monthly based on the heat input rate and the applicable emission factor which shall be based on Table E or the best, most current data available (*i.e.,* stack test data, vendor supplied data, or AP-42), whichever is most representative. Fuel flow rate and heat content data shall be used to determine a given SRU incinerator's heat input rate. Any additional emissions due to accidental releases shall be added to the emissions estimates. The 12-month rolling total in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

4. Beavon Units (aka Tail Gas Units)

Emissions of NOx, CO, PM, PM10, PM2.5 and VOC from the Beavon Units shall be calculated monthly based on the following equation and monitoring tail gas rate and concentration.

The emissions in lbs/hour shall be calculated using the following equation:

$$BTGU = \frac{TGC \times F_1 \times [1/24] \times TGC \times MW}{MV}$$

Where:

BTGU = Beavon Tail Gas Unit Emissions (lb/hr)

TGM = Tail Gas Maximum Rate (MMScf/day)

F_1 = 1,000,000 Scf/MMScf

TGC = Tail Gas Concentration (ppmvd/1,000,000)

MV = Molar Volume (Scf/lb mole)

MW = Molecular Weight (lb/lb mole)

5. Beavon Units Cooling Towers

To determine the PM, PM10 and PM2.5 emission rates from Beavon cooling towers, the Permittee shall monitor the cooling water flow (recirculation) rates, the drift loss factor, and the Total Dissolved Solids (TDS) content of the water. The Permittee shall use the calculation method below (the most current AP-42, Chapter 13.4) to determine the cooling tower PM and PM10 emissions on a monthly basis. The Permittee shall assume drift at 0.005% of the flow rate. The Permittee shall calculate Average TDS data from WinBLISS/LIMS lab data system from 2006 or the equivalent.

The Beavon cooling towers PM emissions shall be calculated using the following equation:

$(PM)_{BCT}$ = CWF x F_2 x OH x Drift x F_3 x TDS x F_4 x [1/2000]

Where:

$(PM)_{BCT}$ = Beavon Cooling Towers Particulate Matter Emissions (ton/year)

CWF = Cooling Water Flow Rate (gal/min)

F_2 = 60 min/hr

OH = Operating Hours (hour/year)

Drift = 0.005%

F_3 = 3.785 Liter/gal

TDS = Total Dissolved Solids data from WinBLISS/LIMS lab data system from 2006 or the equivalent

F_4 = 1 lb/453.59 g

PM_x emissions shall be calculated based on droplet size distribution using the method described in "Calculating Realistic PM10 Emissions from Cooling Towers" by Joel Reisman and Gordo Frisbie, where the weight % value for each droplet size can be found in Tables 2 and 3 contained therein.

PM_x (tpy) = PM (tpy) x (PM_x)wt%

For example:
PM_{10} (tpy) = PM (tpy) x (PM_{10})wt%

6. Sulfur Pits

   a. The Permittee shall monitor the hours of venting from the pits, at a minimum, on a weekly basis. The emissions of PM, PM10 and PM2.5 from the sulfur pits shall be calculated using the Table L-2 emission factors and the following calculation method:

Sulfur Pits Emissions (tpy) = EF x MV x 1/2000

Where:

EF = hourly emission rate (lb/hr) [Table L-2]

MV = Maximum Venting (hr/yr)

Table L-2. Sulfur Pits Emission Factors

Pollutants from Sulfur Pits	SRU – 1 (lbs/hr)	SRU-2 (lbs/hr)	SRU-3 (lbs/hr)	SRU-4 (lbs/hr)
PM, PM10 and PM2.5	0.2	0.2	0.1	0.1

b. The 12-month rolling total emissions in TPY for all the units shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

I. PLATFORMER VENTS

1. The Permittee shall monitor the hours of utilization and the throughput of each platformer, at a minimum, on a weekly basis. Platformer # 2, #3 and #4 maximum capacities are 25,000, 45,000 and 45,000 Barrels per day, respectively.

2. The Permittee shall calculate the SO2, CO, and VOC emissions from each platformer catalyst regenerator vent (*i.e.*, #2 Platformer, #3 Platformer, and #4 Platformer) based on each unit's design capacity, weekly hours of utilization, and the appropriate emission factors as follows:

SO2 and CO (tpy) emissions shall be calculated using the following equation:

Emissions = EF x UT/7.5 MBPD x OH x 1/2000

Where:

EF = Emission Factor for SO2 and CO are:

SO2 – 0.022 lb/hr for a 7500 Barrels/day Catalyst Regenerator

CO – 0.15 lb/hr for a 7500 Barrels/day Catalyst Regenerator

UT = Unit Throughput in MBPD (thousands of barrels per day)

OH = Operating Hours (hours/year)

1/2000 = Conversion from pounds to tons

VOC (tpy) emissions shall be calculated using the following equation:

Emissions = EF x UT x OD x 1/2000

Where:

EF = 0.24 lb/1000 Barrels of Throughput

OD = Operating Days (days/year)

UT = Unit Throughput in MBPD

1/2000 = Conversion from pounds to tons

J. SULFURIC ACID PLANTS

1. Process Stack Emissions: The SO2 emissions from the sulfuric acid plant's process stack shall be monitored using a SO2 CEMS (Table M-1).

Table M-1 Sulfuric Acid Plant SO_2 Emissions

Emission Unit	**Pollutant**	**Monitored By**
Sulfuric Acid Plant Stack	SO2	CEMS

2. Sulfuric Acid Plant's heater stack emissions: The Permittee shall monitor the fuel flow rate and the fuel heat content for each of the acid plant heaters, at a minimum, on a weekly basis to determine the heat input rate to the heaters. In addition, for the heater stack, the Permittee shall monitor and record the hours of operation of the heaters, at a minimum, on a weekly basis.

   a. The Permittee shall calculate the SO2 and NOx emissions from the heater stack every month based on the hours of the operation and the applicable emissions factor referenced in Table N below.

   b. The Permittee shall calculate the PM, PM10, PM2.5, CO and VOC emissions from the heater stack using the Heater Default emission factors in Table E or the most current and representative data available (*i.e.,* stack test data, vendor supplied data, or the literature).

Table N. Sulfuric Acid Plant Heater Emission Factors

SO2 – 45.8 lbs/hour	NOx – 12.2 lbs/hour

3. The 12-month rolling total in tons/year, for both the sulfuric acid plant's process stack and the heater, shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

K. DELAYED COKER STEAM-VENT

1. The Permittee shall monitor the number of coke drum cycles, at a minimum, on a weekly basis.

2. The Permittee shall calculate the CO, PM, PM10, PM2.5, SO2 and VOC emissions from the coker steam vent monthly using stack test-based emission factors derived from testing of the steam vent emissions as listed in Table O. The 12-month rolling total emissions in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

Table O - Emission Factors for the Coker Steam Vent

SO2 – 2.8 lb/cycle	CO – 2 lb/cycle	PM, PM10, PM2.5- 32.9 lb/cycle	VOC – 138.4 lb/cycle

L. PROCESS FUGITIVES

1. The Permittee shall monitor the equipment and their components within each process at the source in accordance with the requirements at 40 CFR 60.592.

2. The Permittee shall calculate the fugitive VOC emissions from all process equipment component leaks and compressor and pump seals monthly using one of the following two methodologies depending on whether the components are monitored or unmonitored:

   a. Fugitive VOC emissions from monitored components shall be estimated using the appropriate correlations (*e.g., the Petroleum Industry Leak Rate/Screening Value Correlations*) found in the U.S. EPA's most current *Protocol for Equipment Leak Emission Estimates* and the Modified Trapezoidal method to estimate emissions over time. Fugitive VOC from monitored components shall be managed using LeakDAS software or equivalent.

   b. Fugitive VOC emissions from unmonitored components shall be calculated using the Refinery Average Emission Factors applicable to each component type (*e.g.*, valves in heavy liquid service) as found in EPA's most current *Protocol for Equipment Leak Emission Estimates*, Table 2-2. Also, where appropriate, the VOC content of the material in a given process area maybe used in the emissions estimate to reflect the fact that not all of the material emitted is VOC (*e.g.*, ethane is not a VOC). The Permittee may also use the specific applicable default

unmonitored component emission factor in Table P to calculate the VOC emissions.

3. The 12-month rolling total emissions for the monitored and unmonitored components in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months in accordance with Table P.

Table P. Monitored/Unmonitored Component Emission Factors

Monitored or Unmonitored Components	**Service**	**VOC Emission Factor lb/hr/components** **Unmonitored**	**Monitored Components' Control Eff %**
Valves	Gas/Vapor	0.059	97
	Light Liquid	0.024	97
	Heavy Liquid	0.005	0
	SOCMI Rule – LL	0.0089	97
Connectors	Gas/Vapor	0.00055	30
	Light Liquid	0.00055	30
	Heavy Liquid	0.00055	30
	SOCMI Rule – LL	0.0005	30
Pressure Relief Valves	Gas/Vapor	0.35	97
Compressor Seals	Gas Vapor	1.399	85
Pump Seals	Light Liquid	0.251	85
	Heavy Liquid	0.046	0
	SOCMI Rule – LL	0.044	85
Open Ended Lines	Gas/Vapor	0.0051	0

	Light Liquid	0.0051	0
	Heavy Liquid	0.0051	0
	SOCMI Rule – LL	0.0038	0
Sampling Connections	Gas/Vapor	0.033	0
	Light Liquid	0.033	0
	Heavy Liquid	0.033	0

M. OILY WASTEWATER COLLECTION SYSTEM AND TREATMENT PLANT

1. The Permittee shall monitor the process drains and junction boxes within the Oily Wastewater Collection System on a monthly basis with visual inspections of process drain components including but not limited to each water trap, carbon canister, pressure relief valve, and gas-tight covers at a given unit and the variable parameter input data including but not limited to stream flows and compositions for the Advance Wastewater Treatment Plant. The data/observations shall be collected, at a minimum, on a weekly basis.

2. The Permittee shall determine the rate of VOC emissions from the Oily Water Collection System using the general uncontrolled emission factor of 0.07 lb/hr/equipment as published by the Texas Commission of Environmental Quality (TCEQ) "Air Permit Technical Guidance for Chemical Sources - Fugitive Guidance" (TCEQ-APDG 6422v2, Revised 06/18), for process drains in refineries with a control efficiency based upon the observations noted during the visual inspections.

3. The Permittee shall determine fugitive VOC emissions from the wastewater pre-treatment units such as # 1, 2 and 3; API Separators #1, 2 and 3; WEMCO units using the emission factor of 0.2 lbs VOC per 1000 gallons of wastewater treated.

4. The Permittee shall determine the VOC emissions from the further wastewater treatment in the Advance Wastewater Treatment Plant using the most current version of EPA's WATER9 model. Variable (*i.e.*, non-static) elements such as stream flows and compositions shall be input into the WATER9 static emissions model to determine the monthly fugitive VOC emissions from the advanced wastewater treatment plant.

5. The 12-month rolling total emissions in tons/year from the wastewater collection system and the treatment plant shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

N. LOCAL SALES RACK AND SERVICE STATION

1. The Permittee shall monitor fuel throughput and the type of fuel handled on a weekly basis. The Permittee shall calculate the VOC emissions from truck loading and fuel pump operations monthly using the procedures outlined in Chapter 5.2 of EPA's AP-42 regarding "Transportation and Marketing of Petroleum Liquids." In the event that the methodology in AP-42 is superseded by a more recent edition or editions of AP-42, the permittee shall use the most recent edition.

2. The 12-month rolling total emissions in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months using the literature or the current AP-42 emission factors.

O. MARINE LOADING OPERATIONS and THERMAL OXIDIZER CONTROL

1. The Permittee shall monitor material throughput, material vapor pressure, material molecular weight and ambient conditions in the marine loading operations area, at a minimum, on a weekly basis.

2. The Permittee shall either calculate the VOC emission factors from marine loading-operations monthly using the procedures outlined in Chapter 5.2 of EPA's AP-42 regarding "Transportation and Marketing of Petroleum Liquids." or use the default emission factors in Table Q to calculate the VOC emissions, whichever is more representative. In the event that the permittee uses AP-42 to calculate the VOC emissions and the methodology in AP-42 has been superseded by a more recent edition or editions of AP-42, the permittee shall use the most recent edition.

3. The 12-month rolling total emissions in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

Table Q. Marine Loading VOC Emission factors

Product	**Barges- Loading Losses lb/1000 gallons**	**Ships – Loading Losses lb/1000 gallons**
Crude Oil	0.8	0.8
Gasoline/Gasoline Blends	3.4	1.8
Platformate	2.6	1.1
MTBE	7.2	2.9
Methanol	1.0	0.4

Toluene	0.6	0.3
Xylene	0.2	0.1
Jet Fuel	0.013	0.005
Kerosene	0.013	0.005
No. 2 Oil	0.012	0.005
Light Cycle Oil	0.04	0.02
CATFEED	0.0002	0.0001
SVGO	0.0002	0.0001
Slurry	0.0002	0.0001
No. 6 Oil	0.00009	0.00004

4. Thermal Oxidizer – Gasoline Transfer Emission Control (Stack H-1612):

   The Permittee shall record gasoline loading/unloading amounts, at a minimum, on a weekly basis. The Permittee shall use the following equations and emission factors to calculate VOC emissions from the thermal oxidizer on a monthly basis.

   $$MVE = [[HE \times (VOC)_u \times GL \times F_5] + (HR)_{PA}] \times EF \times 365 \times 1/2000$$

   Where:

   MVE = Marine Vapor Thermal Oxidizer Emissions (tons/year)

   HE = Hydrocarbon Enthalpy (John Zink: 19,852 Btu/lb)

   $(VOC)_u$ = 2.6 lbs/1000 gallons of gasoline (Uncontrolled VOC Loading Loss, AP-42 Chapter 5.2)

   GL = Gas Loading (gal/day)

   F_5 = 1 MMBtu/1x10^6 Btu

   $(HR)_{PA}$ = Pilot & Assist Heat Release (John Zink: 138 MMBtu/day)

   1/2000 = Conversion from pounds to tons

The Permittee shall calculate CO, NOx, SO2 and PM, PM10, and PM2.5 emissions from the Thermal Oxidizer total heat release, from the assist gas and the process gas, in MMBtu using the following emission factors:

EF = Emission Factors (lb/MMBtu):

CO – 0.02lb/MMBtu

NO_x – 0.015 lb/MMBtu

SO2 – 0.001 lb/MMBtu

PM, PM10 and PM2.5 – 0.01 lb/MMBtu

P. MATERIAL HANDLING

1. The Permittee shall monitor Coke, Sulfur, FCC Catalyst and any other solids handling in terms of production quantities/throughputs, rates, moisture content, and pile areas as well as the wind speed, at a minimum, on a weekly basis from the storage areas of the East Dock, West Dock, Dry Dock, Catalyst Handling, and Coke Handling.

2. The Permittee shall calculate the PM, PM10 and, PM2.5 emissions from the material storage and handling areas using the procedures outlined in AP-42, Volume I, Chapter 13, see "Aggregate Handling and Storage Piles." The Permittee may use Table R, Table S and Table T emission factors to calculate emissions for the sulfur handling area, coke handling activities and FCC catalyst handling, respectively. In the event that the methodology in AP-42 is superseded by a more recent edition or editions of AP-42, the permittee shall use the most recent edition.

3. The 12-month rolling total emissions in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

Table R. Sulfur Handling Area Emission Factors

Sulfur Handling Activity	**PM lb/ton**	**PM10 lb/ton**	**PM2.5 lb/ton**
Truck to Stockpile – Stock Pile to Truck Stock to Conveyor – Conveyor to Stock	0.013	0.006	0.001
Conveyor	0.024	0.012	0.002

Table S. Coke Handling Emission Factors

Coke Handling Activity	**PM – lb/ton**	**PM10 – lb/ton**	**PM2.5- lb/ton**	**Control Efficiency %**
Wet Coke – Drop Coke Drums to Below Grade Pit, Transfer from Pit to Pad, Transfer from Pad to Crusher, Drop into Ships	0.001	0.001	0.0001	75
MC-8601 Crusher	0.02	0.02	0.02	90

Table T - FCC Catalyst Handling Emission factors

Catalyst Handling Activity	PM- lb/ton	PM10- lb/ton	PM2.5- lb/ton	Control Efficiency %
Load Catalyst to Hopper	0.035	0.016	0.0025	0
Load Catalyst to Reactor, Catalyst Drop Out of Reactor	0.035	0.016	0.0025	50

Q. ROAD TRAFFIC

1. The Permittee shall record the vehicle operation data, using the number of vehicles in service and their mileage, within the source on a monthly basis.

2. The Permittee shall calculate the PM, PM10, and PM2.5 emissions from the monthly vehicular traffic using the procedures outlined in AP-42, Volume I, Chapter 13, related to "Paved Roads" or by using the default emission factors listed in Table U. In the event that the methodology in AP-42 is superseded by a more recent edition or editions of AP-42, the permittee shall use the most recent edition.

3. The 12-month rolling total emissions in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

Table U. Road Traffic Emission Factors

	PM	PM10	PM2.5
EF – lbs/Vehicle Mile Travelled	0.044	0.009	0.002

R. PAINTING

1. The Permittee shall record operating data related to painting including but not limited to container size, number of containers, paint or thinner type, and ingredients, on a monthly basis.
2. The monitoring shall be performed pursuant to 40 CFR §52.21(aa)(12)(iv) as follows:
   - Provide a paint specification sheet from the vendor for validating the content of the VOC that is contained in or created by all materials used in or at the emission unit;
   - Assume that the emission unit emits all of the VOC that is contained in or created by any raw material used in or at the emission unit, if it cannot otherwise be accounted for in the process; and
   - Where the vendor of a material, which is used in or at the emission unit, publishes a range of pollutant content from such material, the owner or operator must use the highest value of the range to calculate the VOC emissions unless the EPA determines there is site-specific data or a site-specific monitoring program to support another content within the range.
3. The Permittee shall calculate the VOC emissions from painting performed at the source monthly by summing up the amount of VOC contained within the paints and thinners that are consumed.
4. The 12-month rolling total emissions in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

S. FIRE TRAINING

1. The Permittee shall record the amount of fuel (*i.e.,* gasoline, diesel, or propane) combusted and FireFOAM used on a monthly basis.
2. The Permittee shall calculate the SO2, NOx, CO, PM, and VOC emissions from fire training by using the emission factors published in "Calculation Methods for Criteria Air Pollutant Emission Inventories," Brooks Air Force Base, TX, July 1994. The VOC attributable to the quantity of FireFOAM used shall be added to the amount of VOC resulting from fuel combustion.

3. The 12-month rolling total emissions in tons/year shall be calculated monthly as the sum of the monthly emissions for the previous 12 consecutive months.

V. PERFORMANCE TESTS

The Permittee shall conduct stack tests to determine unit-specific emission factor(s) for the process/emission units listed in Table W within 180 days of the effective date of this permit for the major emission units. For new and modified major emissions units, the stack test shall be conducted within 180 days after startup. A major emissions unit, as defined in 40 CFR 52.21(aa)(2)(iv), is any emissions unit that has the potential to emit 100 tons per year or more of any PALs pollutant which includes but is not limited to those listed in Table W. The stack tests shall be conducted to establish the unit-specific emission factors as stated in Table W. These emission factors shall supersede any factor that was developed prior to the effective date of this permit.

Table W. Stack Tests Required to Develop Unit Specific Pollutant Emission Factors

Process/Emission Unit	Source ID	Pollutant
#2 Distillation Unit (DU) Fractionator Heaters	H-101, H-104	NOx, SO2
Penex – Hot Oil Heaters	H-202 C-200A C-200C	NOx CO CO
Utility Fractionation - Heater	H-160	NOx
#4 Distillate Desulfurizer (DD) Heater	H- 2202	NOx
#2 Sulfonate Heaters	H-4502, 4503, 4504 4505	NOx
#5 CDU Heaters	H- 3101A, H3101B	NOx, CO, SO2
#6 CDU Heaters	H-4101A, H-4101B	NOx, CO, SO2
#3 Platformer Heaters	H-4401, H-4402, H-4451, H-4452, H-4453, H-4455	NOx
#3 VAC Unit Heaters	H-4201, H-4202	NOx, SO2

#4 Platformer Heaters	H-5401, H-5402, H-5451, H-5452, H-5453, H-5455	NOx
#6 DD Heater	H-4602	NOx
#6 DD Compressors	C-4601A, C-4601B, C-4601C	NOx
#7 DD Heater	H-4302	NOx
#9 DD Heater	H-5302	NOx
FCCU	Stack 7051	PM, PM10, PM2.5
Sulfur Recovery Plant	H-1061, H-1032, H-1031, H-1042, H-4761, H-4745, Process Units 1030, 1040, 4740, 4750	CO, PM, PM10, PM2.5
West Benzene Stripper	Stack - 3510	VOC
Utility Boilers	# 5, #7, #8, #9 and #10	NOx, SO2
Utility Gas Turbines	# 4, #7, #8	NOx, CO, SO2

VI. RECORDKEEPING

A. The Permittee shall retain on site a copy of all records necessary to determine compliance with any requirement of this permit and of the PALs, including determinations on a monthly basis of each emission unit's 12-month rolling total emissions for each PAL pollutant, for at least 5 years from the date of such record.

B. The Permittee shall retain a copy of the following records for the duration of the PALs effective period plus 5 years:

1. A copy of the PALs' permit application and any applications for revisions to the PALs; and

2. Each annual certification of compliance pursuant to title V and the data relied on in certifying the compliance.

VII. REPORTING AND NOTIFICATIONS

The Permittee shall submit semi-annual monitoring reports and prompt deviation reports to the EPA in accordance with the applicable title V operating permit program. The reports shall meet the requirements below.

A. SEMI-ANNUAL REPORT

The semi-annual report shall be submitted to the EPA within 30 days of the end of each reporting period. The first six-month reporting period shall begin on the effective date of this permit. Each semi-annual report shall contain the information and documentation required in paragraphs (1) through (8) below:

1. The identification of the Permittee (owner and operator) and the permit number.

2. Total annual emissions (expressed in tons per year) based on a 12-month rolling total for each month in the reporting period recorded and, for the first two semi-annual reports, sums of emissions for the first eleven months after the effective date of the PAL permit.

3. All data relied upon, including, but not limited to, any Quality Assurance or Quality Control data, and the monthly unit-specific determinations referred to in Sections IV and V, in calculating the monthly and annual PALs pollutant emissions.

4. A list of each unit at the source that is either new or modified during the preceding six-month reporting period. The list shall include the specific monitoring method for each unit, including formulas and calculation methods. The Permittee shall also include a proposed amendment to the Appendix to this permit, for review by EPA, to reflect these changes.

5. A notification of a shutdown of any monitoring system, whether the shutdown was permanent or temporary, the reason for the shutdown, the anticipated date that the monitoring system will be fully operational or replaced with another monitoring system. The notification should also indicate whether the emission unit monitored by the shutdown monitoring system continued to operate, and the calculation of the emissions of the pollutant based on maximum potential emissions.

6. A signed statement by the responsible official (as defined by the applicable title V operating permit program) certifying the truth, accuracy, and completeness of the information provided in the report.

7. A list of each change in the monitoring method during the preceding six-month period for any unit already listed in the Appendix to this permit. The list shall include the specific new monitoring method for each such unit, including

formulas and calculation methods. The Permittee shall also include a proposed amendment to the Appendix to this permit, for review by EPA, to reflect these changes.

8. The number, duration, and cause of any deviations or monitoring malfunctions (other than the time associated with zero and span calibration checks), and any corrective action taken.

B. DEVIATION REPORT

The Permittee shall promptly – within 2 working days – submit reports of any deviations or exceedance of the PAL emissions limits in accordance with 40 CFR 52.21(aa)(14)(ii). A report submitted pursuant to the Permittee's title V permit shall satisfy this reporting requirement if the Permittee indicates on the deviation report that it serves dual purposes and it is submitted to EPA.

The deviation reports shall contain the following information:

1. The identification of owner and operator and the permit number;
2. The PALs requirement that experienced the deviation or that was exceeded;
3. Emissions resulting from the deviation or the exceedance; and
4. A signed statement by the responsible official (as defined by the applicable title V operating permit program) certifying the truth, accuracy, and completeness of the information provided in the report.

C. RE-VALIDATION RESULTS

The owner or operator shall submit to the EPA the results of any re-validation test or method within 3 months after completion of such test or method, as required in Section V.

D. SUBMISSION OF REPORTS/NOTIFICATIONS BY MAIL AND ELECTRONIC DELIVERY

All reports required by Sections VII(A)(1)-(6), VII(B) and VII(C) shall be sent to the following address:

Chief, Air Compliance Branch
EPA-Region 2
290 Broadway, New York, NY 10007
Buettner.Robert@EPA.gov

All other deliverables shall be sent to the following address:

Chief, Permitting Section
Air Programs Branch
EPA-Region 2
290 Broadway, New York, NY 10007
Chan.Suilin@EPA.gov

VIII. AMBIENT AIR MONITORING REQUIREMENTS

A. The Permittee shall procure, install, and maintain an ambient air monitoring network to monitor the NO2, SO2, and PM2.5 NAAQS in accordance with the following requirements:

1. The monitoring network for each pollutant shall be designed to measure compliance with their respective National Ambient Air Quality Standards (NAAQS) as identified at *https://www.epa.gov/criteria-air-pollutants*, 40 CFR §50, 40 CFR §50.1 (definition of NAAQS exceedance) and 40 CFR Part 51, Appendix W (definition of NAAQS violation).

2. The Permittee shall submit to EPA a proposed monitoring plan and proposed Quality Assurance Project Plan (QAPP) that includes monitoring for NO2, SO2, and PM2.5 no later than 2 months after the effective date of this permit.

3. The monitoring plan and QAPP for each pollutant must be approved by EPA prior to the installation and operation of the monitors.

4. The Permittee shall install and commence operation of the NO2, SO2, and PM2.5 ambient monitors no later than 6 months after the effective date of this permit.

5. The monitoring network shall include a site specific meteorological monitor that is installed and operated in accordance with EPA Meteorological Monitoring Guidelines (Quality Assurance Handbook for Air Pollution Measurement Systems - Volume IV: Meteorological Measurements (EPA-454/B-08-002), and Meteorological Monitoring Guidance for Regulatory Modeling Applications (EPA-454/R-99-005)) and approved by EPA within the monitoring plan. The meteorological monitor shall be, at a minimum, 10 meters in height and shall be located at the former Cottage Meteorological Station.

6. Permittee shall install and operate five SO2, two NO2, and one PM2.5 ambient air monitors at the following locations:

   a. <u>SO2 Monitoring</u>
      i. Station #1, WEST GATE MARTIN MARIETTA ALUMINA, Lat/Long: 17.7050, -64.7801
      ii. Station #3, PLOT 25, ESTATE CLIFTON HILL, Lat/Long: 17.7205, -64.7763
      iii. Station #4, PLOT 487 ESTATE BARREN SPOT, Lat/Long: 17.7325, -64.7829
      iv. Station #5, PLOT 214 ESTATE RUBY, Lat/Long: 17.7397, -64.7515
      v. New SO2 Station: UTM: 314200.00, 1960100, 36

b. NO2 Monitoring
   i. Station #1, WEST GATE MARTIN MARIETTA ALUMINA, Lat/Long: 17.7050, -64.7801
   ii. New NO2 Station: UTM: 314300.00, 1960100, 25

c. PM2.5 Monitoring
   i. New PM2.5 Station: UTM: 314400.00, 1960100, 23

7. In the event that it is infeasible for the Permittee to locate a monitor at the specific coordinates for the new SO2, NO2, and PM 2.5 station, referenced in condition VIII(A)(6) above, the Permittee shall propose to EPA a nearby alternate site and provide a detailed explanation for the proposed change in the monitoring plan submitted to EPA. This alternate site must be approved by EPA prior to installation of the monitor and implementation of the program.

B. The Permittee shall implement a NO2, SO2, and PM2.5 NAAQS ambient air monitoring program according to the following requirements:

1. The Permittee shall implement the monitoring program in accordance with the NO2, SO2, and PM2.5 ambient air monitoring plan and QAPP which is approved by EPA. No data may be accepted prior to the approval of the monitoring plan and QAPP.

2. After the Permittee receives EPA's approval of the monitoring plan and QAPP, the Permittee shall submit interim status reports to EPA and the Virgin Islands Department of Planning and Natural Resources (DPNR) every month on the progress made by the Permittee until it begins implementing the monitoring program.

3. The Permittee shall follow the Quality Assurance/Quality Control (QA/QC) procedures as specified under 40 CFR Part 58.

4. Monitoring sites must meet EPA siting criteria identified in 40 CFR Part 58 and all methods for monitoring ambient air should be designated as either a reference method or equivalent method in accordance with 40 CFR Part 53.

5. The Permittee must provide the easting and northing locations and the elevation of the new monitors.

6. The monitoring data collection shall continue for the duration of the PAL permit.

7. In collecting the monitoring data, the Permittee shall comply with the EPA approved monitoring plan and QAPP.

8. EPA may re-evaluate its approval of the monitoring plan and QAPP and require changes to one or more of the plans if the Permittee seeks to modify the PAL permit or adds or modifies one or more of the facility's units.

9. In the event that EPA approves a change to the monitoring plan or QAPP, all conditions in this Section shall continue to apply.

10. The Permittee shall notify EPA and DPNR of the date of commencement of operation of the monitoring program.

11. The data collection must be done continuously and contain sufficient data capture for determining compliance with the NAAQS consistent with the EPA approved monitoring plan.

12. If an exceedance of any of the NAAQS is measured, the Permittee shall notify EPA and DPNR of such an exceedance in writing within 15 days of Permittee's completion of normal QA/QC procedures for the specified month.

13. In the event that the monitoring data shows a violation of any of the NAAQS, as described in the 40 CFR Part 51, Appendix W, including the longer term averages of these pollutants based on their respective design values, the Permittee shall contact EPA and DPNR immediately, but no later than 15 days after detection of the violation so that action may be taken to resolve the violation which may include reopening the PAL pursuant to 40 CFR §52.21(aa)(8)(ii)(b)(3).

C. The Permittee shall submit reports of the ambient air monitoring data in the following manner:

1. The monitoring data shall be uploaded to EPA's Air Quality System (AQS) on a quarterly basis ("quarterly reports") as follows:

   a. Quarterly reports shall be uploaded to AQS within 90 days of the end of the last day of each quarter.

   b. An annual report shall be uploaded to AQS within 90 days of the end of the last quarter of the calendar year.

2. In addition, on a quarterly basis, the Permittee shall send a letter to EPA and DPNR confirming that the data was uploaded to AQS along with a summary report of the findings which shall include, at a minimum, an overview of the monitoring data, the percent data capture, and reference to any exceedances or violations of NAAQS.

LIMETREE BAY TERMINALS and LIMETREE BAY REFINING

APPENDIX – Abbreviations and List of Units

Abbreviations

DU	Distillate Unifier	LPG	Liquified Petroleum Gas
H	Heater	C	Compressor
CDU	Crude Distillation Unit	SRU	Sulfur Recovery Unit
VAC	Vacuum Unit	SWS	Sour Water Stripper
DD	Distillate Desulfurizer	GT	Gas Turbine
VIS	Visbreaker	MTBE	Methyl Tertiary Butyl Ether
LSG	Low Sulfur Gasoline	TAME	Tertiary Amyl Methyl Ether
FCCU	Fluid Catalytic Cracking Unit	LP	Low Pressure
GRU	Gas Recovery Unit	HP	High Pressure
WWTP	Wastewater Treatment Plant	API	American Petroleum Institute
TK-TKD	Tank & Tank-Drum	R	Reboiler
PD	Pump Driver	UTT1	Name of the Tank
WEMCO	Manufacturer – Air Flotation Unit	CT	Cooling Tower

List of PAL Permit Units

FCCU STK-7051
H-101
H-104
H-401A
H-401B
H-401C
H-200
H-201
H-202
H-160
H-601
H-604
H-605
H-800A
H-800B
H-801
H-2201A
H-2201B
H-2202
H-2400
C-2400A
C-2400B
H-2501
H-4502
H-4503
H-4504
H-4505
H-3101A
H-3101B
H-4101A
H-4101B
H-4401
H-4402
H-4451
H-4452
H-4453
H-4454
H-4455
H-4201
H-4202
H-5401

H-5402
H-5451
H-5452
H-5453
H-5454
H-5455
H-4601A
H-4601B
H-4602
C-4601A
C-4601B
C-4601C
H-4301A
H-4301B
H-4302
H-5301A
H-5301B
H-5302
H-1061 (and T-1061)
H-1032
H-1042
H-4761 (and T-4761)
H-4745
H-4901
STK-7801
H-7801
H-7802
R-7801
H-8501A
H-8501B
C-1500A
C-1500B
C-1500C
C-200A
C-200B
C-200C
#5 Boiler (B-1155)
#6 Boiler (B-3301)
#7 Boiler (B-3302)
#8 Boiler (B-3303)
#9 Boiler (B-3304)
#10 Boiler (B-3701)
GT No. 4 (G-3404)
GT No. 5 (G-3405)
GT No. 7 (G-3407)
GT No. 8 (G-3408)

GT No. 9 (G-3409)
GT No. 10 (G-3410)
GT No. 13 (G-3413)
H-3413
PD-1602
PD-1603
PD-1604
PD-1605
PD-1620
Unit No. 1030
Unit No. 1040
Unit No. 4740
Unit No. 4750
Beavon CT #1
Beavon CT #2
#2 Flare (H-1105)
#3 Flare (H-1104)
#5 Flare (H-3351)
#6 Flare (H-3352)
#7 Flare (H-3301)
FCC Flare (L.P. Flare - STK 7941)
Ground Flare (H.P. Flare - STK 7942)
LPG Flare (STK 7921)
TK-01PR
TK-02PR
TK-03PR
TK-04PR
TK-05PR
TK-06PR
TK-07PR
TK-0702
TK-1061
TK-1062
TK-1063
TK-1064
TK-1065
TK-1066
TK-1071
TK-1118
TK-1151
TK-1156
TK-1157
TK-1201
TK-1202

List of PAL Permit Units

TK-1203
TK-1204
TK-1205
TK-1206
TK-1207
TK-1208
TK-1236
TK-1301
TK-1302
TK-1304
TK-1305
TK-1401
TK-1600
TK-1621
TK-1622
TK-1626
TK-1627
TK-1628
TK-1629
TK-1630
TK-1631
TK-1632
TK-1633
TK-1653
TK-1663
TK-2653
TK-2654
TK-3201
TK-3202
TK-3203
TK-3204
TK-3205
TK-3208
TK-3209
TK-3301
TK-3302
TK-3303
TK-3304
TK-3305
TK-3306
TK-3384
TK-3385
TK-3386
TK-4501
TK-4502
TK-4503

TK-4761
TK-4762
TK-4763
TK-4764
TK-4765
TK-6801
TK-6802
TK-6803
TK-6804
TK-6805
TK-6806
TK-6807
TK-6808
TK-6809
TK-6810
TK-6811
TK-6812
TK-6813
TK-6814
TK-6815
TK-6816
TK-6817
TK-6818
TK-6819
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TK-6821
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TK-6841
TK-6842
TK-6843
TK-6851
TK-6852
TK-6853

TK-6854
TK-6856
TK-6857
TK-6858
TK-6859
TK-6860
TK-6871
TK-6872
TK-6873
TK-6874
TK-6875
TK-6876
TK-6877
TK-6880
TK-6881
TK-6883
TK-6884
TK-6887
TK-6888
TK-7051
TK-7201
TK-7202
TK-7206
TK-7207
TK-7208
TK-7209
TK-7210
TK-7211
TK-7301
TK-7302
TK-7401
TK-7402
TK-7403
TK-7404
TK-7405
TK-7406
TK-7407
TK-7408
TK-7409
TK-7410
TK-7411
TK-7412
TK-7413
TK-7414
TK-7415
TK-7416

List of PAL Permit Units

TK-7417
TK-7418
TK-7421
TK-7422
TK-7423
TK-7424
TK-7425
TK-7426
TK-7427
TK-7428
TK-7429
TK-7430
TK-7431
TK-7432
TK-7433
TK-7434
TK-7435
TK-7436
TK-7437
TK-7438
TK-7439
TK-7440
TK-7441
TK-7443
TK-7444
TK-7445
TK-7446
TK-7447
TK-7448
TK-7449
TK-7451
TK-7452
TK-7453
TK-7454
TK-7455
TK-7456
TK-7501
TK-7502
TK-7503
TK-7504
TK-7505
TK-7506
TK-7507
TK-7508
TK-7509
TK-7510

TK-7511
TK-7512
TK-7513
TK-7514
TK-7515
TK-7516
TK-7517
TK-7521
TK-7522
TK-7523
TK-7524
TK-7525
TK-7526
TK-7528
TK-7541
TK-7542
TK-7571
TK-7601
TK-7602
TK-7603
TK-7604
TK-7605
TK-7931
TK-7932
TK-7933
TK-7934
TK-7943
TK-7951
TK-7955
TK-7956
TK-7966
TK-7971
TK-7973
TK-7974
TK-S-7974
TK-7975
TK-S-7975
TK-7976
TK-7977
TK-7978A
TK-7978B
TK-7979A
TK-7979B
TK-7981
TK-7982
TK-7983

TK-7984
TK-7986
TK-7987
TK-7988
TK-8001
TK-8002
TK-8501
TK-8502
TK-8503
TK-8505
TK-8508
TK-8511
TK-8701
UTT1
TK-D290 (frmly D1301)
TKD-1609
TKD-1610
#2 Plat Vent
#3 Plat Vent
#4 Plat Vent
STK-7802
Coker Steam Vent
2 CDU
3 CDU / 1 VAC
5 CDU
6 CDU
2 VAC
3 VAC
1 VIS (2 DU FRAC)
2 VIS
2 DD
3 DD
4 DD
5 DD
6 DD
7 DD
9 DD
UT. FRAC.
PENEX
2 PLAT/2 HYDROBON
3 PLAT / 3 HYDROBON
4 PLAT / 4 HYDROBON
LSG
2 SULFOLANE
DISULFIDE
NAP FRAC.

List of PAL Permit Units

DEISO-HEXANIZER
AMINE (3,4,5 & T-931)
MEROX
1&2 GRU/H2 CON
1&2 LPG TREATER
3 LPG FRAC
FCC & GASCON
DIMERSOL
6 AMINE & SHU
ALKY & ACID PLANT
LIGHT ENDS TREAT
MTBE
TAME
SELECTIVE HYDRO
1 BEAVON / 1&2 SRU
2 BEAVON / 3&4 SRU
SRU
3 SWS
4 SWS
5 SWS
6 SWS
DELAYED COKER
Utilities (Powerhouse and Boilers)
EAST FUEL GAS SYSTEM
WEST FUEL GAS SYSTEM
TERMINAL (OFFSITES/RUNDOWNS/XFERS)
West Refiniery Oily Water
East Refinery Oily Water
FCC/DCU Oily Water
Terminal Oily Water
#1 API (Unit No. 1660)
#1 WEMCO
#2 API (Unit No. 1661)
#2 WEMCO
West Benzene Stripper (STK-3510)
#3 API (Unit No. 1662)
#3 WEMCO
East Benzene Stripper (STK-3530)
Advanced Waste Water Tretament
Unit No. 1651

Service Station
Unit No. 1600
East Sulfur H&S
West Sulfur H&S
Sulfur Storage, Handling & Shipping
Coke handling, storage, and loading system
FCC Catalyst Handling
Road Dust
Painting
Firefighter Training